



SEQUENCE LISTING

<110> Hattori, Fumiyuki
Sugimura, Keihiro
Furuya, Mayumi

<120> Therapeutic Methods and Agents for Diseases Associated with
Decreased Expression of AOP-1 Gene or AOP-1

<130> 58777.000012

<140> 10/642,272

<141> 2003-08-18

<150> PCT/JP02/01358

<151> 2001-02-18

<150> JP 41003/2001

<151> 2001-02-16

<160> 32

<170> PatentIn version 3.3

<210> 1

<211> 1542

<212> DNA

<213> Homo sapiens

<400> 1

```
ctgaagatgg cggctgctgt aggacggttg ctccgagcgt cggttgcccg acatgtgagt    60
gccattcctt ggggcatttc tgccactgca gccctcaggc ctgctgcatg tggaagaacg    120
agcttgacaa atttattgtg ttctggttcc agtcaagcaa aattattcag caccagttcc    180
tcatgccatg cacctgctgt caccagcat gcaccctatt ttaagggtag agccgttgtc    240
aatggagagt tcaaagacct aagccttgat gactttaagg ggaaatattt ggtgcttttc    300
ttctatcctt tggatttcac ctttgtgtgt cctacagaaa ttgttgcttt tagtgacaaa    360
gctaacgaat ttcacgatgt gaactgtgaa gttgtcgcag tctcagtggg ttcccacttt    420
agccatcttg cctggataaa tacaccaaga aagaatggtg gtttgggcca catgaacatc    480
gcactcttgt cagacttaac taagcagatt tcccagagact acggtgtgct gttagaaggt    540
tctggtcttg cactaagagg tctcttcata attgacccca atggagtcac caagcatttg    600
agcgtcaacg atctcccagt gggccgaagc gtggaagaaa ccctccgctt ggtgaaggcg    660
ttccagtatg tagaaacaca tggagaagtc tgcccagcga actggacacc ggattctcct    720
acgatcaagc caagtccagc tgcttccaaa gagtactttc agaaggtaaa tcagtagatc    780
acccatgtgt atctgcacct tctcaactga gagaagaacc acagttgaaa cctgctttta    840
tcattttcaa gatggttatt tgtagaaggc aaggaaccaa ttatgcttgt attcataagt    900
attactctaa atgttttgtt tttgtaattc tggctaggac cttttaaaca tggtagttg    960
ctagtacagg aatcgtttat tggtaacatc ttggtggctg gctagctagt ttctacagaa   1020
```

cataatttgc	ctctatagaa	ggctattctt	agatcatgtc	tcaatggaaa	cactcttctt	1080
tcttagcctt	acttgaatct	tgcctataat	aaagtagagc	aacacacatt	gaaagcttct	1140
gatcaacggt	cctgaaattt	tcattcttgaa	tgtctttgta	ttaaactgaa	ttttctttta	1200
agctaacaaa	gatcataatt	ttcaatgatt	agccgtgtaa	ctcctgcaat	gaatgtttat	1260
gtgattgaag	caaatgtgaa	tcgtattatt	ttaaaaagtg	gcagagtgc	ttactgatc	1320
atgcatgac	cctcatccct	gaaattgagt	ttatgtagtc	attttactta	ttttattcat	1380
tagctaactt	tgtctatgta	tatttctaga	tattgattag	tgtaatcgat	tataaaggat	1440
atttatcaaa	tccagggatt	gcattttgaa	attataatta	ttttctttgc	tgaagtattc	1500
attgtaaaac	atacaaataa	catattttaa	caaaaaaaaa	aa		1542

<210> 2
 <211> 1433
 <212> DNA
 <213> Rattus norvegicus

<400> 2	
gctatcgtgg	ctcttgcggt
ctcgggtggct	cggcctgcga
gcctgtttgct	tctagaagaa
aaagtttgcc	tttagcacca
ccatttttaa	ggtactgctg
taaggggaaa	tacttggtgc
agaaattggt	gctttcagtg
tgcggtttct	gtggattccc
tggtggtttg	ggccacatga
agactacgga	gtactgttgg
ccctaattggt	gtcatcaagc
agaaccactc	cgtttggtaa
acccaactgg	acaccagagt
ctttgagaag	gtccatcaat
catgccaaaa	gagagcccca
caccatgctt	gtgtttataa
gttaaagggtg	gccagctcct
attctctaca	agtgttgggt
ttagcctgcc	ctgaagcttg
atgaagtagc	acatagcgcc

agtgaaagct tctgatcaag gtcctgaaat ttcctcttgg atttttgtta attatgctga	1260
atttcccatt attttttagt gtagtcatta actcacagtg tccttggtg ttctaaggta	1320
ttgatgagtt ataatcatga aggactatgt ttctaaaaca ctatgtcatt ttcttttctt	1380
caagtgtctg atgtaaagaa taaaaataaa cattaagata aaaaaaaaaaaa aaa	1433

<210> 3
 <211> 1382
 <212> DNA
 <213> Mus sp.

<400> 3	
ctactcctcg gtatctccgc ctatcgtgcc tcttgctgctg tctgaagatg gcggcagctg	60
cgggaagggtt gctctgggtcc tcggttgctc gtcattgcaag tgctatttcc cggagtattt	120
ctgcctcaac agttcttagg cctgttgctt ctagaagaac ctgtttgaca gacatactgt	180
gggtctgcctc tgcccaagga aagtcagcct ttagcaccag ttctcttttc cacaccctg	240
ctgtcaccca gcacgcgccc tattttaaag gtactgctgt tgtcaatgga gagttcaaag	300
agctgagtct cgacgacttt aagggaagaa acttggtgct tttcttctac cctttggatt	360
tcacatttgt gtgtcctaca gaaattgttg ctttcagtga caaagccaat gaatttcagt	420
atgtaaactg tgaagtagtt gcagtttcag tggattccca cttcagtcatt cttgcctgga	480
tcaacacacc aagaaagaat ggtgggttgg gccacatgaa catcacactg ttgtcggata	540
taactaagca gatatccga gactacggag tgctgttggga aagtgtggtc attgcactca	600
gaggtctctt cattattgac cctaattggtg tcgtcaagca cctgagtgct aacgaccttc	660
cgggtgggccc cagtgtggaa gaaacactcc gtttggtaaa ggcgttccag tttgtagaga	720
cccatggaga agtctgcccc gccaaactgga caccagagtc ccctacgatc aagccaagtc	780
caacagcttc caaagagtac tttgagaagg tccatcagta ggccatccta tgtctgcaat	840
tacctgaagc ttttcaggcc aaaaaagagc cccagctgga atccttccaa tgccttgaag	900
attatttata gaatggcaaa acctcattat gtttgtgttt ataagtactg ctccacaggc	960
tttgtaattc taagacaggt tcaggctctc taaaggtggc tagctgcttc catagctgcc	1020
cttactaggg acttcttggg ggctaaccaa ttctccccga gtgctttgcc cccatttctt	1080
ggatcatgtc cttagagggg aagcattctt tcccttagcc tgccctgaac cttggtctac	1140
agtgaagtag cacatagtgc cagtacttgg tgaaatgaag tagcacatag caccagcact	1200
taatggaagc ttctgatcaa ggtcctaaaa tttcctcttg aatttttgtg aattatgctg	1260
aatttccctt tttttttttt taaacagtgt ccttgtgtgt tctgaggtat tgaagaggta	1320
taatcatgaa ggactatgtc taatccataa gtcattttct tcaagagctg gatatataga	1380
at	1382

<210> 4
 <211> 256
 <212> PRT
 <213> Homo sapiens

<400> 4

Met Ala Ala Ala Val Gly Arg Leu Leu Arg Ala Ser Val Ala Arg His
 1 5 10 15

Val Ser Ala Ile Pro Trp Gly Ile Ser Ala Thr Ala Ala Leu Arg Pro
 20 25 30

Ala Ala Cys Gly Arg Thr Ser Leu Thr Asn Leu Leu Cys Ser Gly Ser
 35 40 45

Ser Gln Ala Lys Leu Phe Ser Thr Ser Ser Ser Cys His Ala Pro Ala
 50 55 60

Val Thr Gln His Ala Pro Tyr Phe Lys Gly Thr Ala Val Val Asn Gly
 65 70 75 80

Glu Phe Lys Asp Leu Ser Leu Asp Asp Phe Lys Gly Lys Tyr Leu Val
 85 90 95

Leu Phe Phe Tyr Pro Leu Asp Phe Thr Phe Val Cys Pro Thr Glu Ile
 100 105 110

Val Ala Phe Ser Asp Lys Ala Asn Glu Phe His Asp Val Asn Cys Glu
 115 120 125

Val Val Ala Val Ser Val Asp Ser His Phe Ser His Leu Ala Trp Ile
 130 135 140

Asn Thr Pro Arg Lys Asn Gly Gly Leu Gly His Met Asn Ile Ala Leu
 145 150 155 160

Leu Ser Asp Leu Thr Lys Gln Ile Ser Arg Asp Tyr Gly Val Leu Leu
 165 170 175

Glu Gly Ser Gly Leu Ala Leu Arg Gly Leu Phe Ile Ile Asp Pro Asn
 180 185 190

Gly Val Ile Lys His Leu Ser Val Asn Asp Leu Pro Val Gly Arg Ser
 195 200 205

Val Glu Glu Thr Leu Arg Leu Val Lys Ala Phe Gln Tyr Val Glu Thr
 210 215 220

His Gly Glu Val Cys Pro Ala Asn Trp Thr Pro Asp Ser Pro Thr Ile
225 230 235 240

Lys Pro Ser Pro Ala Ala Ser Lys Glu Tyr Phe Gln Lys Val Asn Gln
245 250 255

<210> 5
<211> 257
<212> PRT
<213> Rattus norvegicus

<400> 5

Met Ala Ala Ala Ala Gly Arg Leu Leu Trp Ser Ser Val Ala Arg Pro
1 5 10 15

Ala Ser Thr Ile Phe Arg Ser Ile Ser Ala Ser Thr Val Leu Arg Pro
20 25 30

Val Ala Ser Arg Arg Thr Cys Leu Thr Asp Met Leu Trp Ser Ala Cys
35 40 45

Pro Gln Ala Lys Phe Ala Phe Ser Thr Ser Ser Ser Phe His Thr Pro
50 55 60

Ala Val Thr Gln His Ala Pro His Phe Lys Gly Thr Ala Val Val Asn
65 70 75 80

Gly Glu Phe Lys Glu Leu Ser Leu Asp Asp Phe Lys Gly Lys Tyr Leu
85 90 95

Val Leu Phe Phe Tyr Pro Leu Asp Phe Thr Phe Val Cys Pro Thr Glu
100 105 110

Ile Val Ala Phe Ser Asp Lys Ala Asn Glu Phe His Asp Val Asn Cys
115 120 125

Glu Val Val Ala Val Ser Val Asp Ser His Phe Ser His Leu Ala Trp
130 135 140

Ile Asn Thr Pro Arg Lys Asn Gly Gly Leu Gly His Met Asn Ile Thr
145 150 155 160

Leu Leu Ser Asp Leu Thr Lys Gln Ile Ser Arg Asp Tyr Gly Val Leu
165 170 175

Leu Glu Ser Ala Gly Ile Ala Leu Arg Gly Leu Phe Ile Ile Asp Pro
180 185 190

Asn Gly Val Ile Lys His Leu Ser Val Asn Asp Leu Pro Val Gly Arg
Page 5

195 200 205
 Ser Val Glu Glu Pro Leu Arg Leu Val Lys Ala Phe Gln Phe Val Glu
 210 215 220
 Thr His Gly Glu Val Cys Pro Pro Asn Trp Thr Pro Glu Ser Pro Thr
 225 230 235 240
 Ile Lys Pro Ser Pro Thr Ala Ser Lys Glu Tyr Phe Glu Lys Val His
 245 250 255

Gln

<210> 6
 <211> 257
 <212> PRT
 <213> Mus sp.

<400> 6

Met Ala Ala Ala Ala Gly Arg Leu Leu Trp Ser Ser Val Ala Arg His
 1 5 10 15
 Ala Ser Ala Ile Ser Arg Ser Ile Ser Ala Ser Thr Val Leu Arg Pro
 20 25 30
 Val Ala Ser Arg Arg Thr Cys Leu Thr Asp Ile Leu Trp Ser Ala Ser
 35 40 45
 Ala Gln Gly Lys Ser Ala Phe Ser Thr Ser Ser Ser Phe His Thr Pro
 50 55 60
 Ala Val Thr Gln His Ala Pro Tyr Phe Lys Gly Thr Ala Val Val Asn
 65 70 75 80
 Gly Glu Phe Lys Glu Leu Ser Leu Asp Asp Phe Lys Gly Lys Tyr Leu
 85 90 95
 Val Leu Phe Phe Tyr Pro Leu Asp Phe Thr Phe Val Cys Pro Thr Glu
 100 105 110
 Ile Val Ala Phe Ser Asp Lys Ala Asn Glu Phe His Asp Val Asn Cys
 115 120 125
 Glu Val Val Ala Val Ser Val Asp Ser His Phe Ser His Leu Ala Trp
 130 135 140
 Ile Asn Thr Pro Arg Lys Asn Gly Gly Leu Gly His Met Asn Ile Thr
 145 150 155 160

Leu Leu Ser Asp Ile Thr Lys Gln Ile Ser Arg Asp Tyr Gly Val Leu
165 170 175

Leu Glu Ser Ala Gly Ile Ala Leu Arg Gly Leu Phe Ile Ile Asp Pro
180 185 190

Asn Gly Val Val Lys His Leu Ser Val Asn Asp Leu Pro Val Gly Arg
195 200 205

Ser Val Glu Glu Thr Leu Arg Leu Val Lys Ala Phe Gln Phe Val Glu
210 215 220

Thr His Gly Glu Val Cys Pro Ala Asn Trp Thr Pro Glu Ser Pro Thr
225 230 235 240

Ile Lys Pro Ser Pro Thr Ala Ser Lys Glu Tyr Phe Glu Lys Val His
245 250 255

Gln

<210> 7
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward Primer

<400> 7
tgcagtttca gtggattccc a

21

<210> 8
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse Primer

<400> 8
ttcatgtggc ccaaacca

18

<210> 9
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe

<400> 9
tcttgctgg atcaacacac caagaaag

28

<210> 10
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward Primer

<400> 10
ccctctgctt gctgatgtga ct 22

<210> 11
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse Primer

<400> 11
cctgtaagcg atgccctcat 20

<210> 12
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe

<400> 12
agcttgtccc agaattacgg cgtgttgaa 29

<210> 13
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward Primer

<400> 13
gcggatgaag agaggcacg 19

<210> 14
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse Primer

<400> 14
gccacaccgt cctttcca 18

<210> 15
<211> 23

<212> DNA
 <213> Artificial Sequence
 <220>
 <223> Probe
 <400> 15
 tggagacctg ggcaatgtgg ctg 23

<210> 16
 <211> 17
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Forward Primer
 <400> 16
 acgggtgctc agcctcc 17

<210> 17
 <211> 18
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Reverse Primer
 <400> 17
 aggcttgtgc cctgcttc 18

<210> 18
 <211> 25
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Probe
 <400> 18
 cagcctgcac tgaggagatc cctca 25

<210> 19
 <211> 28
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Forward Primer
 <400> 19
 aaccgcggtc gtggctcttg cgttctct 28

<210> 20
 <211> 30
 <212> DNA
 <213> Artificial Sequence
 <220>

<223> Reverse Primer
 <400> 20
 gcgctagctt attgatggac cttctcaaag 30

 <210> 21
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Forward Primer
 <400> 21
 ttacagattg ccgcttgctc 20

 <210> 22
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Reverse Primer
 <400> 22
 ccagcagtgg aataaggcct 20

 <210> 23
 <211> 25
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Probe
 <400> 23
 aatcacgacc cactgcaagg aacca 25

 <210> 24
 <211> 19
 <212> DNA
 <213> Artificial Sequence
 <400> 24
 tgcaccacca actgcttag 19

 <210> 25
 <211> 19
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Reverse Primer
 <400> 25
 ggatgcaggg atgatgttc 19

 <210> 26

<211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Probe

<400> 26
 cagaagactg tggatggccc ctc 23

<210> 27
 <211> 877
 <212> DNA
 <213> Rattus norvegicus

<400> 27
 gaattcggca cgagggtcgt ccgcgtgtcc ggctcttgcc cacgcagtca tggcctccgg 60
 caacgcgcac atcggaaagc ctgcccctga cttcacgggc accgccgtgg tggatggtgc 120
 ctttaaggaa atcaagcttt cagactacag agggaaagtac gtggtcctct ttttctatcc 180
 actggacttc acttttgttt gccccacgga gatcatcgct tttagcgacc acgctgagga 240
 cttccgaaag ctaggctgcg aggtgctggg agtgtctgtg gactctcagt tcacccacct 300
 ggcttgatc aatacccccac ggaaggaggg aggcttgggc cactgaata tccctctgct 360
 tgctgatgtg actaaaagct tgtcccagaa ttacggcgtg ttgaaaaatg atgagggcat 420
 cgcttacagg ggcctcttta tcatcgatgc caagggtgtc cttcgccaga tcacagtcaa 480
 cgacctacct gtgggacgct ctgtagatga ggctctccgc ctcgccagg cttttcagta 540
 tacagatgag catggggaag tctgtcctgc tggctggaag cccggcagtg acaccatcaa 600
 acccaatgtg gatgacagca aggaatactt ctccaaacac aactgagatg ggtaaaccatc 660
 ggtgagcctg aatcccggat ctcacctgcg cccttacctg gatgtcctgt gctggcccag 720
 aaaacgctag atcttctct acattctaaa ggggctggag gctaggccga ggctttctca 780
 ttaccacct ggaatctggt gaatagtac cctgccctga gcacaccag ctgggcccag 840
 gtctatagga aaccaataaa gtattagga cagtga 877

<210> 28
 <211> 198
 <212> PRT
 <213> Rattus norvegicus

<400> 28

Met Ala Ser Gly Asn Ala His Ile Gly Lys Pro Ala Pro Asp Phe Thr
 1 5 10 15

Gly Thr Ala Val Val Asp Gly Ala Phe Lys Glu Ile Lys Leu Ser Asp
 20 25 30

Tyr Arg Gly Lys Tyr Val Val Leu Phe Phe Tyr Pro Leu Asp Phe Thr
 Page 11

35

40

45

Phe Val Cys Pro Thr Glu Ile Ile Ala Phe Ser Asp His Ala Glu Asp
50 55 60

Phe Arg Lys Leu Gly Cys Glu Val Leu Gly Val Ser Val Asp Ser Gln
65 70 75 80

Phe Thr His Leu Ala Trp Ile Asn Thr Pro Arg Lys Glu Gly Gly Leu
85 90 95

Gly Pro Leu Asn Ile Pro Leu Leu Ala Asp Val Thr Lys Ser Leu Ser
100 105 110

Gln Asn Tyr Gly Val Leu Lys Asn Asp Glu Gly Ile Ala Tyr Arg Gly
115 120 125

Leu Phe Ile Ile Asp Ala Lys Gly Val Leu Arg Gln Ile Thr Val Asn
130 135 140

Asp Leu Pro Val Gly Arg Ser Val Asp Glu Ala Leu Arg Leu Val Gln
145 150 155 160

Ala Phe Gln Tyr Thr Asp Glu His Gly Glu Val Cys Pro Ala Gly Trp
165 170 175

Lys Pro Gly Ser Asp Thr Ile Lys Pro Asn Val Asp Asp Ser Lys Glu
180 185 190

Tyr Phe Ser Lys His Asn
195

<210> 29
<211> 560
<212> DNA
<213> Homo sapiens

<400> 29
atggcgacga aggccgtgtg cgtgctgaag ggcgacggcc cagtgcaggg catcatcaat 60
ttcgagcaga aggaaagtaa tggaccagtg aaggtgtggg gaagcattaa aggactgact 120
gaaggcctgc atggattcca tgttcatgag tttggagata atacggcagg ctgtaccagt 180
gcaggctctc actttaatcc tctatccaga aaacacggtg ggccaaagga tgaagagagg 240
catgttgagg acttgggcaa tgtgactgct gacaaagatg gtgtggccga tgtgtctatt 300
gaagattctg tgatctcact ctcaggagac cattgcatca ttggccgcac actggtggtc 360
catgaaaaag cagatgactt gggcaaaggt ggaaatgaag aaagtacaaa gacaggaaac 420
gctggaagtc gtttggcttg tgggtgaatt gggatcgccc aataaacatt cccttggatg 480

tagtctgagg ccccttaact catctgttat cctgctagct gtagaaatgt atcctgataa 540
acattaaaca ctgtaatctt 560

<210> 30
<211> 154
<212> PRT
<213> Homo sapiens

<400> 30

Met Ala Thr Lys Ala Val Cys Val Leu Lys Gly Asp Gly Pro Val Gln
1 5 10 15
Gly Ile Ile Asn Phe Glu Gln Lys Glu Ser Asn Gly Pro Val Lys Val
20 25 30
Trp Gly Ser Ile Lys Gly Leu Thr Glu Gly Leu His Gly Phe His Val
35 40 45
His Glu Phe Gly Asp Asn Thr Ala Gly Cys Thr Ser Ala Gly Pro His
50 55 60
Phe Asn Pro Leu Ser Arg Lys His Gly Gly Pro Lys Asp Glu Glu Arg
65 70 75 80
His Val Gly Asp Leu Gly Asn Val Thr Ala Asp Lys Asp Gly Val Ala
85 90 95
Asp Val Ser Ile Glu Asp Ser Val Ile Ser Leu Ser Gly Asp His Cys
100 105 110
Ile Ile Gly Arg Thr Leu Val Val His Glu Lys Ala Asp Asp Leu Gly
115 120 125
Lys Gly Gly Asn Glu Glu Ser Thr Lys Thr Gly Asn Ala Gly Ser Arg
130 135 140
Leu Ala Cys Gly Val Ile Gly Ile Ala Gln
145 150

<210> 31
<211> 7
<212> PRT
<213> Rattus norvegicus

<400> 31

His Ile Ser Val Asn Asp Leu
1 5

<210> 32
<211> 7
<212> PRT
<213> Rattus norvegicus

<400> 32

His Leu Ser Val Asn Asp Leu
1 5